UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/720,761	03/26/2001	Franz Laermer	10191/1629	5642

26646 7590 11/06/2002

KENYON & KENYON
ONE BROADWAY
NEW YORK, NY 10004

EXAMINER
CHEN, KIN CHAN

ART UNIT	PAPER NUMBER
1765	7

DATE MAILED: 11/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/720,761	LAERMER ET AL.
	Examiner	Art Unit
	Kin-Chan Chen	1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *19-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *19-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: In claim 22, line 2, "fluoroalcane" is not described in the specification.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 19, 24, 29, and 34 recite the limitation "prior to / or during the anisotropic plasma etching " in lines 4 and 5. There is insufficient antecedent basis for this limitation in the claim because there is no etching step in the process.

Claims 19-36 recite the limitation " the process gas". There is insufficient antecedent basis for this limitation in the claim because there is no etching step in the process, it is unclear how process gas works.

4. Claims 19-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 19-21, 25-27, 30-32, and 34-36, "selected from the group of" is vague and indefinite because it is unclear as to the scope of the claim. The examiner suggests replace it with -- selected from the group consisting of--.

In claims 19-21, 25-27, 30-32, and 34-36, "at least from time to time" is vague and indefinite because it is unclear what, if anything, differentiates the process step with or without said phrase.

In claim 22, line 2, "fluoroalcane" is vague and indefinite because the meaning is unclear.

In claims 22, 24, and 33, "Teflon-type material" is vague and indefinite because it is unclear what "type" was intended to convey.

In claims 21, 32, and 36, "NO_x" is vague and indefinite because it is unclear what "x" was intended to convey.

In claims 23, 28, 29, and 34, "light and easily " is a relative term with no basis for comparison. Thus the metes and bounds of the claim are unclear.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 19-22 and 24-27 are rejected under under 35 U.S.C. 103(a) as obvious over Flamm et al (Journal of the Electrochemical Society, Dec. 1982, USA Bd 129, Nr.12, Page 2755-2760).

Flamm teaches a method of anisotropic plasma etching a laterally defined structure in as silicon substrate using a process gas. Flamm teaches adding a fluorine-delivering etching gas to the process gas. The fluorine-delivering etching gas may include NF_3, ClF_3 or BrF_3 (page 2756, col. 1, full paragraph 3). Flamm also teaches that plasma in a wide range of gas mixtures including CF_4, CF_4/O_2 and C_2F_6/O_2 (instant claims 20, 21, 22, 26, and 27) can be used to supply fluorine atoms for selective isotropic silicon etching. The said gas mixtures can deposit polymer (so-called precipitating at least one passivating material in the instant claims), see page 2755, col. 1 and 2). Because it is known that gas comprising CF_4 or C_2F_6 can supply fluorine atoms for selective isotropic silicon etching and deposit polymer and because it is disclosed by Flamm, hence, it would have been obvious to one with ordinary skill in the art to incorporate gas mixtures including CF_4/O_2 and C_2F_6/O_2 in the method of etching silicon using the fluorine-delivering etching gas including NF_3, ClF_3 or BrF_3 (instant claims 19, 24, 25) and use them in any combinations thereof in order to provide their art recognized advantages and produce an expected result since they have been taught to be useful for the same purpose (etching silicon sbustrate).

7. Claims 23 and 28-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Flamm et al. as applied to claims 19-22 and 24-27 above, and further in view of Charlet et al. (US 5,047,115).

Flamm teaches a method of anisotropic plasma etching a laterally defined structure in as silicon substrate using a process gas. Flamm teaches adding a fluorine-delivering etching gas to the process gas. The fluorine-delivering etching gas may include NF_3, ClF_3 or BrF_3 (page 2756, col. 1, full paragraph 3). Flamm also teaches that plasma in a wide range of gas mixtures including CF_4, CF_4/O_2 and C_2F_6/O_2 can be used to supply fluorine atoms for selective isotropic silicon etching. The said gas mixtures can deposit polymer (so-called precipitating at least one passivating material in the instant claims 29, 31, 33, 34), see page 2755, col. 1 and 2. Because it is known that gas comprising CF_4 or C_2F_6 can supply fluorine atoms for selective isotropic silicon etching and deposit polymer and because it is disclosed by Flamm, hence, it would have been obvious to one with ordinary skill in the art to add gas mixtures including CF_4/O_2 and C_2F_6/O_2 (instant claims 30, 31, 32, 33, 35, 36) in the method of etching silicon using the fluorine-delivering etching gas including NF_3, ClF_3 or BrF_3 (instant claims 25, 30, 34) in order to provide their art recognized advantages and produce an expected result.

Unlike the claimed invention, Flamm does not disclose that He or Ne may be used in the process of etching silicon substrate. In the method of etching silicon substrate, Charlet teaches that helium or argon (instant claims 23, 28, 29, 34) may be used in the process of etching silicon substrate so as to ensure the stability of the

discharge and its extension to the substrate (col. 2, lines 65-68). Hence, it would have been obvious to one with ordinary skill in the art to incorporate helium or argon as taught by Charlet in order to ensure the stability of the discharge and its extension to the substrate.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kin-Chan Chen whose telephone number is (703) 305-0222. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech can be reached on (703) 308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-2934.

K-C C
October 31, 2002

Patent Examiner
Group Art Unit 1765